

AUXILIARY LOCATING MECHANISM FOR SPRING CLAMP

FIELD OF THE INVENTION

5 The present invention relates to an auxiliary locating mechanism for spring clamp, and more particularly to an auxiliary locating mechanism for spring clamp that may be conveniently operated in a manner meeting the ergonomics.

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BACKGROUND OF THE INVENTION

A spring clamp is mainly used to firmly and tightly clamp two work pieces together to facilitate subsequent
15 fabricating or machining of the work pieces. For example, two planks may be clamped together using the spring clamp and then drilled or cut. To enable convenient fabricating and machining of the two clamped work pieces, an auxiliary locating mechanism is either
20 provided between two handles of the spring clamp, as shown in Fig. 1, or on one of the two handles of the spring clamp, as shown in Fig. 2. With the auxiliary locating mechanism shown in Fig. 1 or 2, the two handles of the spring clamp may be temporarily held to the
25 clamping position to tightly clamp two work pieces between them for fabricating, or released from the

clamping position when the fabricating of the work pieces is completed.

Both the conventional auxiliary locating mechanisms
5 in Figs. 1 and 2 are effective in terms of the function of temporarily holding the spring clamp handles to the clamping position and releasing the handles from the clamping position after the fabrication of the work pieces. However, both the two conventional auxiliary
10 locating mechanisms do not allow an operator to manipulate them in a manner meeting the principle of ergonomics. For example, when the operator wants to release the two handles of the spring clamp from the clamping position set via the auxiliary locating
15 mechanism shown in Fig. 1, he would have to particularly extend one finger in a different direction to pull or push a release lever A of the auxiliary locating mechanism. Alternatively, when the operator wants to release the two handles of the spring clamp from the
20 clamping position set via the auxiliary locating mechanism shown in Fig. 2, he would have to particularly extend one finger in a different direction to depress a button B provided near a front end of one of the two handles of the spring clamp connected to the auxiliary
25 locating mechanism. In either case, the operator is not allowed to hold the spring clamp at the handles

while operates the auxiliary locating mechanism in a natural and convenient movement. It is therefore desirable to develop an improved and structurally simplified auxiliary locating mechanism for spring clamp, so that the spring clamp is more convenient for use.

SUMMARY OF THE INVENTION

10 A primary object of the present invention is to provide an improved auxiliary locating mechanism for spring clamp, and the auxiliary locating mechanism may be conveniently operated in a manner meeting the ergonomics.

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To achieve the above and other objects, the auxiliary locating mechanism for spring clamp according to the present invention mainly includes a curved locking plate pivotally assembled at a supporting arm to an outer side of a first handle of the spring clamp and having a toothed member provided at a distance behind the supporting arm, and a rack having a front end fixedly connected to a point near a joint of a second handle of the spring clamp and a jaw extended from the second handle for teeth formed on the rack to face toward the toothed member of the locking plate. When the two

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handles are forced at their rear ends to a clamping position, a rear end of the locking plate is simultaneously pushed to engage the toothed member with the rack and thereby locks the two handles to the clamping
5 position. And, when a front end of the locking plate is pushed to disengage the toothed member from the rack, the two handles are automatically pushed open by a torsional spring on the spring clamp.

10 BRIEF DESCRIPTION OF THE DRAWINGS

The structure and the technical means adopted by the present invention to achieve the above and other objects can be best understood by referring to the following
15 detailed description of the preferred embodiments and the accompanying drawings, wherein

Fig. 1 shows a spring clamp using a first conventional auxiliary locating mechanism;

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Fig. 2 shows a spring clamp using a second conventional auxiliary locating mechanism;

Fig. 3 shows a spring clamp having an auxiliary locating
25 mechanism according to the present invention assembled to one of two handles of the spring clamp;

Fig. 4 is a side view showing an initial state of the auxiliary locating mechanism of the present invention before the two handles of the spring clamp are pushed
5 into a clamping position;

Fig. 5 shows the state of the auxiliary locating mechanism of the present invention locking two handles of the spring clamp in the clamping position;
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Fig. 6 shows the manner of operating the auxiliary locating mechanism of the present invention to release the two handles of the spring clamp from the clamping position; and

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Fig. 7 shows the state of the auxiliary locating mechanism of the present invention after the two handles of the spring clamp are released from the clamping position.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Please refer to Fig. 3. The auxiliary locating mechanism for spring clamp of the present invention
25 includes a curved locking plate 1 and a rack 2.

The locking plate 1 is assembled to a lateral outer side 31 of one handle 3 of a spring clamp, and has a curve corresponding to that of the lateral outer side 31 of the handle 3. The locking plate 1 is provided at an inner side facing toward the handle 3 closer to a front thereof with a supporting arm 11, on which a through hole 12 is formed for a screw or a rivet 13 to extend therethrough to connect the locking plate 1 to the handle 3, such that the locking plate 1 may be pivotally turned about the screw or the rivet 13 relative to the handle 3. The locking plate 1 is also provided at the inner side with a sideward projected toothed member 14 locating behind the supporting arm 11 by a predetermined distance. The toothed member 14 is provided at the sideward projected edge with a plurality of teeth 141. A space 40 is normally kept between a root of the toothed member 14 and the inner side of the locking plate 1. Two compression springs 5, 6 are mounted in the space 40 between the toothed plate 14 and the locking plate 1, and between rear ends of the handle 3 and the locking plate 1, respectively. When the locking plate 1 is pivotally turned about the supporting point at the screw or the rivet 13 to move its rear end toward the handle 3 and enter into a locked position, the two compression springs 5, 6 are compressed. The compressed springs 5, 6 provide a

restoring force that helps the rear end of the locking plate 1 to return to an original position when the locking plate 1 is released from the locked position.

- 5 The rack 2 has a predetermined length and is provided at a front end with a through hole 22 for another screw or rivet 13 to extend therethrough, so that the rack 2 is fixedly connected at the front end to a point near a joint 41 of the other handle 4 of the spring clamp
10 and a jaw extended from a front end of the handle 4. The rack 2 is provided along a longitudinal edge facing toward the locking plate 1 with a plurality of sequentially arranged teeth 21, which are adapted to engage with the teeth 141 on the toothed member 14.
15 When the locking plate 1 is in a released position as shown in Fig. 3, a clearance is left between the teeth 21 of the rack 2 and the teeth 141 of the toothed member 14.
- 20 Please refer to Figs. 4 and 5. When the two handles 3, 4 of the spring clamp are fully forced near their rear ends to move into a clamping position, as indicated by the arrows, to tightly clamp two work pieces between two jaws of the spring clamp, the locking plate 1
25 assembled to the handle 3 is simultaneously turned about the screw or rivet 13 at the supporting arm 11 to move

its rear end toward the handle 3. At this point, the toothed member 14 is moved toward the rack 2 for the teeth 141 to engage with some of the teeth 21 on the rack 2 corresponding to the toothed member 14 and be
5 stopped by the engaged teeth 21 from moving any further, so that the handles 3, 4 are also locked to the clamping position. Please refer to Figs. 6 and 7. When the handles 3, 4 are to be released from the clamping position, an operator needs only to apply a minor force against
10 the locking plate 1 at a location a little in front of the supporting arm 11, and the rear end of the locking plate 1 is lifted to disengage the teeth 141 of the toothed member 14 from the teeth 21 of the rack 2. At this point, the two handles 3, 4 automatically move
15 away from each other to release from the clamping position due to an action force of a torsional spring provided on the spring clamp.